The opinion in support of the decision being entered today is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte URSULA ZIEGLER,
KLAUS KURZ,
FRANK REIL,
FRITZ A. SCHMIDT, and
RUDI HERBST

Appeal 2007-0304
Application 09/806,123
Technology Center 1700

Decided: June 28, 2007

Before BRADLEY R. GARRIS, CHUNG K. PAK, and JEFFREY T. SMITH, *Administrative Patent Judges.*

GARRIS, *Administrative Patent Judge.*

DECISION ON APPEAL

This appeal involves claims 1-12, the only claims pending in this application. We have jurisdiction over the appeal pursuant to 35 U.S.C. §§ 6 and 134.

We AFFIRM.

INTRODUCTION

Appellants claim a composite article made from polyacetal and from at least one modified styrene-olefin elastomer and a process for producing the composite article (claims 1 and 10). Appellants' composite includes a polyacetal molding onto which the modified styrene-olefin elastomer has been either coated or directly molded (claim 1, Specification 4). The modified styrene-olefin elastomer comprises 20 to 85% by weight functionalized and/or non-functionalized high-molecular weight styrene-olefin block copolymer and 15 to 70% by weight non-olefinic thermoplastic material (Specification 8, claim 1). Appellants indicate that using the modified styrene-olefin elastomer improves adhesion with polyacetal (Specification 3-4). Appellants' method includes first molding the polyacetal material and then a coating or a molding is made from the modified styrene-olefin elastomer by injection molding onto the polyacetal molding (Specification 5, claim 10).

Claims 1 and 10[1] are illustrative:

> 1. A composite article made from polyacetal and from at least one modified styrene-olefin elastomer, formed by a polyacetal

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[1] Appellants filed an after-final Amendment on July 23, 2004 in which they cancelled the claim language "high-molecular weight" from claim 1. This Amendment was submitted after the Brief was filed and the Examiner's Answer was mailed. The Examiner indicated in her Advisory Action of November 5, 2004 that Appellants' after-final Amendment was entered and that a 35 U.S.C. § 112, second paragraph, rejection addressing the "high-molecular weight" language of claim 1 was withdrawn due to the Amendment. Appellants never updated the claims in the "Claims Appendix" of their Brief to reflect the after-final Amendment. In any event, it is clear from the record that the claims as amended by Appellants on July 23, 2004 are the claims on appeal.

molding which has to some extent or completely been coated with the modified styrene-olefin elastomer, or to which one or more moldings made from the modified styrene-olefin elastomer have been directly molded-on, where the modified styrene-olefin elastomer is a composition which comprises from 20 to 85% by weight of functionalized and/or non-functionalized styrene-olefin block copolymer, built up from rigid end-blocks of styrene and from flexible middle blocks of olefin, and from 15 to 70% by weight of non-olefinic thermoplastic material, and also at least 5 parts by weight respectively and not more than 200 parts by weight respectively of lubricating plasticizer and/or inorganic filler per 100 parts by weight of styrene-olefin block copolymer, and wherein the modified styrene-olefin has a Shore A hardness of from 30 to 90.

10. A process for producing a composite article made from polyacetal and from at least one modified styrene-olefin elastomer, where the modified styrene-olefin elastomer comprises from 15 to 70% by weight of non-olefinic thermoplastic material, and where a molding is first molded from polyacetal, onto which is then molded a coating or at least one molding made from the modified styrene-olefin elastomer, giving an adhesive bond between the polyacetal and the modified styrene-olefin elastomer.

The Examiner relies on the following prior art references as evidence of unpatentability:

Sidler (as translated)	DE 44 34 656 C1	Apr. 4, 1996
Horrion	EP 0 837 097 A1	Apr. 22, 1998

The rejections as presented by the Examiner are as follows:

1. Claims 1-9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Horrion.
2. Claims 10-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sidler in view of Horrion.

Rather than reiterate the respective positions advocated by the Appellants and by the Examiner concerning these rejections, we refer to the Brief and to the Answer respectively for a complete exposition thereof.

Appellants only argue independent claims 1 and 10. Accordingly, claims 2-9 and 11-12 stand or fall with claims 1 and 10, respectively.

OPINION

35 U.S.C. § 103(a) REJECTION OVER HORRION

CLAIM 1

Appellants argue that Horrion requires a complicated additional block copolymer to achieve the improved compatibility or adhesion between the coating and the molded polyacetal article (Br. 5-6). In contrast, Appellants contend that their claimed invention merely requires a compound comprising SEBS (i.e., styrene-ethylene-butylene-styrene block copolymer) and a non-olefinic thermoplastic elastomer to achieve an enhanced bond between the coating and the molding (Br. 6).

We are not persuaded by Appellants' arguments for the reasons below.

Appellants use the open-ended transitional language "comprises" when claiming their "modified styrene-olefin elastomer" (claim 1). Such open-ended transitional claim language indicates that the features recited in the claims are essential, but other features may be added and still form a construct within the scope of the claim. *In re Crish*, 393 F.3d 1253, 1257, 73 USPQ2d 1364, 1367 (Fed. Cir. 2004). Accordingly, like the Examiner (Answer 4), we construe the "modified styrene-olefin elastomer" of claim 1

as being open-ended. It is with this claim construction that we analyze the claims in view of Horrion's disclosure.

Horrion discloses SEBS block-copolymer grafted with a functional grafting group (Horrion 4, l. 15). The grafting group preferably is maleic anhydride (Horrion 3, ll. 49-51). The grafted SEBS block-copolymer is then combined with a non-olefinic thermoplastic elastomer such as thermoplastic polyurethane, thermoplastic copolyesters or thermoplastic copolyamides (Horrion 4-7). The grafted SEBS block-copolymer, the thermoplastic polyurethane, thermoplastic copolyesters or thermoplastic copolyamides are reacted together with a coupling agent to produce a compatibilizer for enhancing the adhesion between thermoplastics and polyacetals (Horrion 7-8). The compatibilizer may be used to enhance the adhesion of thermoplastics, such as styrene/ethylene/butene-block copolymers to polar engineering resins, such as polyacetals (Horrion 8, ll. 37-45). Various additives, such as fillers or processing aids such as lubricants may be added to the compatibilizing blends (Horrion 8, ll. 51-56).

From the above disclosure and the open-ended claim language of claim 1, Appellants' argument that their invention does not require Horrion's "complicated block copolymer" is not persuasive of patentability. Specifically, Horrion discloses a grafted SEBS block copolymer (i.e., a functionalized styrene-olefin elastomer as claimed) that is reacted with thermoplastic polyurethane, thermoplastic copolyesters or thermoplastic copolyamides (i.e., non-olefinic thermoplastic material as claimed) to form a compatibilizing block copolymer (i.e., modified styrene-olefin elastomer as claimed). The compatibilizing block copolymer (i.e., modified styrene-olefin elastomer) blended with a thermoplastic elastomer, such as styrene-

ethylene-butene copolymer, is coated onto an engineering resin, such as polyacetals, to promote adhesion of the thermoplastic elastomer to the engineering resin (Horrion, 8, ll. 37-45 and 9, ll. 27-30).

Therefore, Horrion discloses a compatibilizer (i.e., "modified styrene-olefin elastomer") that is blended with a thermoplastic elastomer to provide improved adhesion of the thermoplastic elastomer to an engineering resin such as a polyacetal. Because Appellants' composite article as claimed includes the open-ended transitional language "comprises" when reciting the features of the "modified styrene-olefin elastomer," the claimed composite encompasses Horrion's composite that includes the compatibilizer (i.e., "modified styrene-olefin elastomer") with a thermoplastic elastomer. In another words, Appellants' claimed "modified styrene-olefin elastomer" does not exclude Horrion's additional "thermoplastic elastomer" because of the open-ended transitional language "comprises." *Crish*, 393 F.3d at 1257, 73 USPQ2d at 1367.

Appellants' argument that "the SEBS-compound used in the present invention does not comprise a modified polyolefin" is contrary to Appellants' disclosure and claims. Claim 1 specifically recites that that the "styrene-olefin copolymer" used to form the "modified styrene-olefin elastomer" is a "functionalized . . . styrene-olefin block copolymer" (i.e., a styrene-olefin block copolymer that has been modified by adding a functionality to the polymer chain) (claim 1). Moreover, Appellants' Specification states that "functionalized . . . styrene-olefin copolymer" may include "maleic anhydride-functionalized . . . tri-block copolymers which have been built up from rigid end-blocks of styrene and from flexible middle blocks of olefin" (Specification 8). Appellants further disclose that the

"styrene-olefin copolymer" may be a "SEBS block copolymer" (Specification 13: 24). In fact, like Appellants, Horrion uses a maleic anhydride functionalized SEBS-copolymer (Horrion, 3, ll. 49-50 and 4, l. 15) to produce the compatibilizer and promote adhesion. Thus, we are not convinced by Appellants' argument.

We add that Appellants cancelled the claim language "high-molecular-weight" from claim 1 in the after-final Amendment filed July 23, 2004, which the Examiner entered. The Examiner's § 103(a) rejection is premised on Horrion's failure to "teach that styrene-olefin copolymer is 'high' molecular weight" (Final Office Action 3). With the Appellants' removal of the phrase "high-molecular-weight" from the claims, the Horrion reference anticipates claim 1. Anticipation is the epitome of obviousness. *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571(CCPA 1982).

From the foregoing, we affirm the Examiner's § 103(a) rejection of claims 1-9 over Horrion.

35 U.S.C. § 103(a) REJECTION OVER SIDLER IN VIEW OF HORRION CLAIM 10

Appellants argue that Sidler uses interlocks to attach the styrene-olefin elastomers to the POM (i.e., polyoxymethylene, a polyacetal), not the composition of the styrene-olefin as claimed (Br. 6).

We cannot agree with Appellants' arguments for the reasons below.

First, the Examiner's rejection is based upon the combination of Horrion's coating composition for providing a stronger bond between the coating and the underlying molding with Sidler's "two-component injection-molding method" for forming a SEBS coating on a polyoxymethylene (i.e.,

polyacetal) molding (Final Office Action 4-5, Answer 3). However, Appellants improperly attack the rejection by arguing the references individually. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Merck & Co.*, 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 426, 208 USPQ 871, 882 (CCPA 1981).

Second, Horrion's disclosure that the compatibilizer (i.e., the modified styrene-olefin elastomer) provides enhanced adhesion of the thermoplastic elastomer to the polyacetal (Horrion, 8, ll. 37-38) provides motivation for combining the compatibilizer (i.e., the modified styrene-olefin elastomer) with Sidler's method of forming a SEBS layer (i.e., a thermoplastic elastomer) on polyoxymethylene (i.e., a polyacetal). Further motivation for the combination, as recognized by the Examiner (Answer 5), is provided by the fact that Horrion discloses mixing the compatibilizer in "styrene/ethylene/butene-block copolymers" (i.e., SEBS) (Horrion, 8, ll. 39-42), the same thermoplastic elastomer used by Sidler (Sidler 6).

Third, Sidler's disclosure to use mechanical interlocks does not preclude using a coating composition such as disclosed by Horrion that provides enhanced adhesion of the coating to the underlying molding. As discussed above, using a coating that yields enhanced adhesion as disclosed by Horrion provides motivation for the combination.

For the above reasons, we affirm the Examiner's § 103(a) rejection of claims 10-12 over Sidler in view of Horrion.

DECISION

We have affirmed the § 103(a) rejection of claims 1-9 over Horrion.

We have affirmed the § 103(a) rejection of claims 10-12 over Sidler in view of Horrion.

The Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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